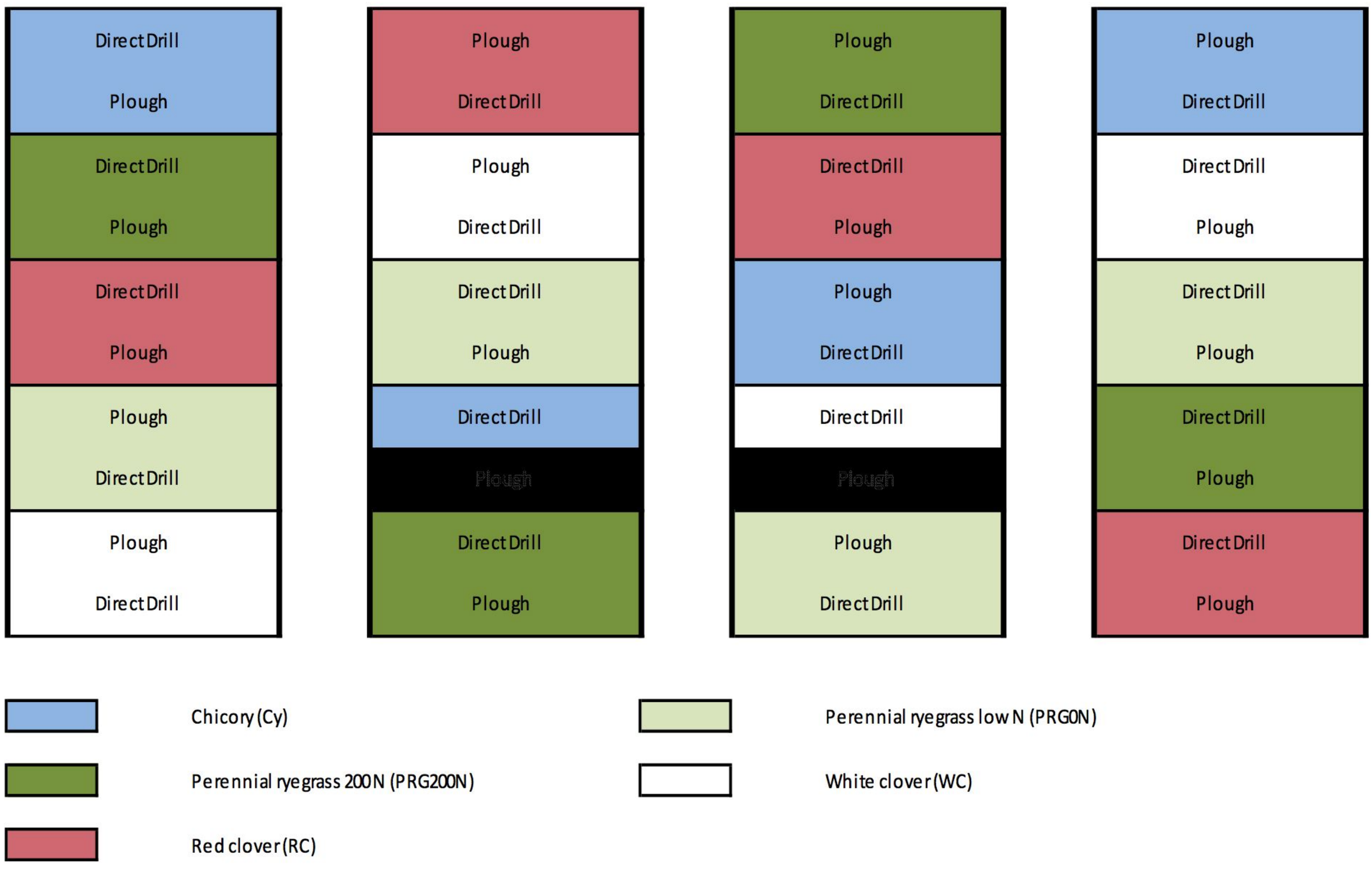
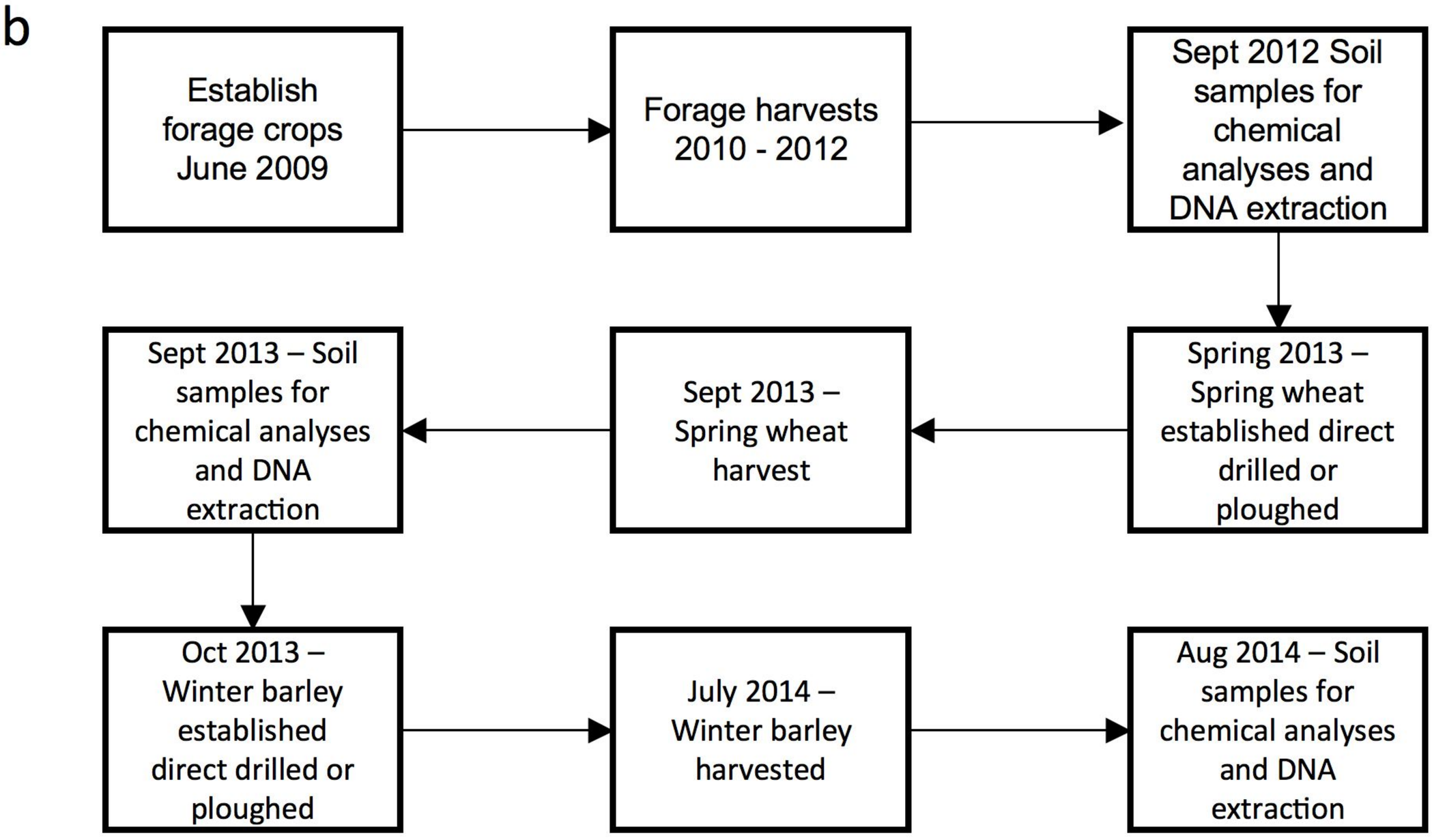
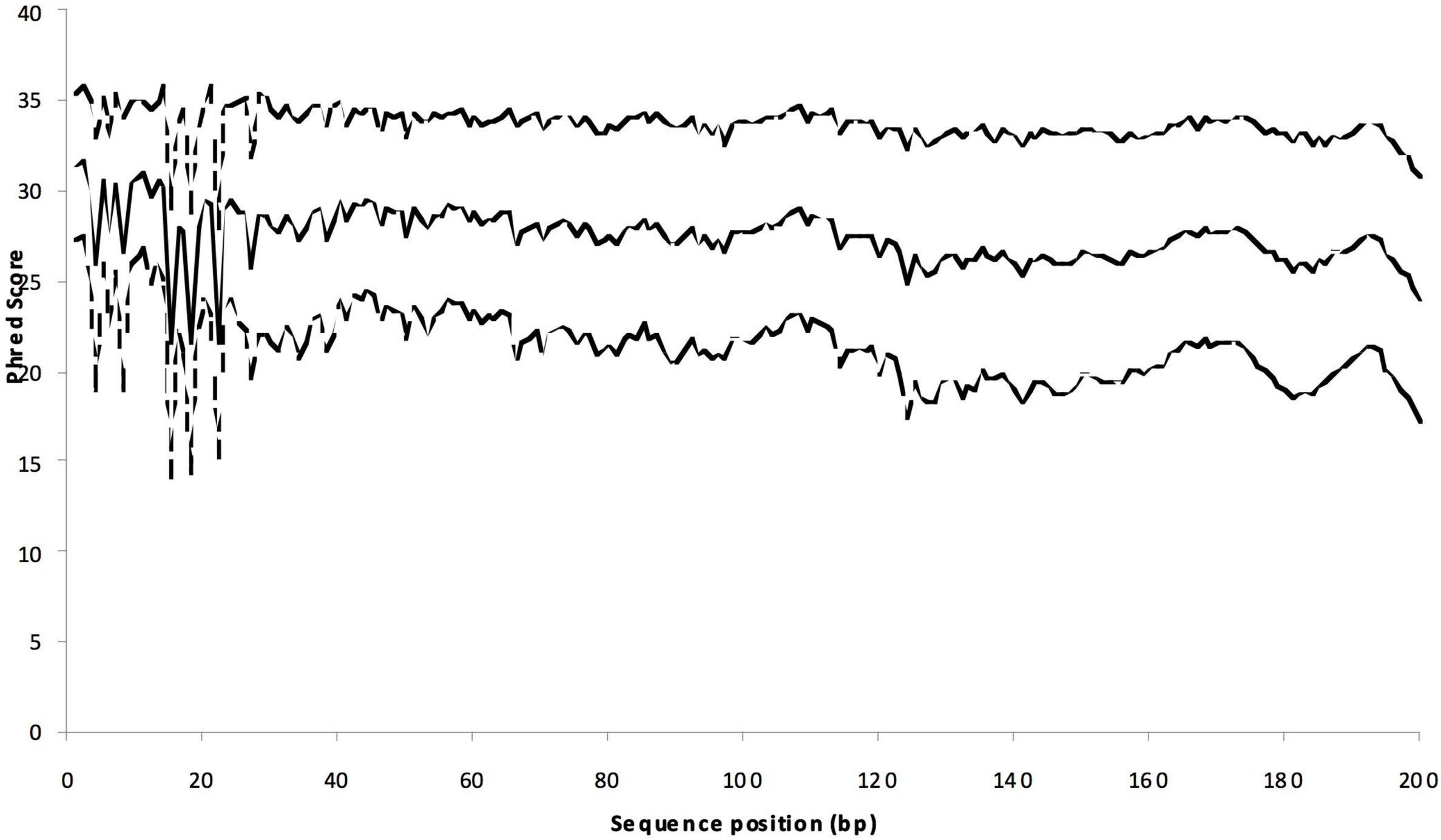
a



b



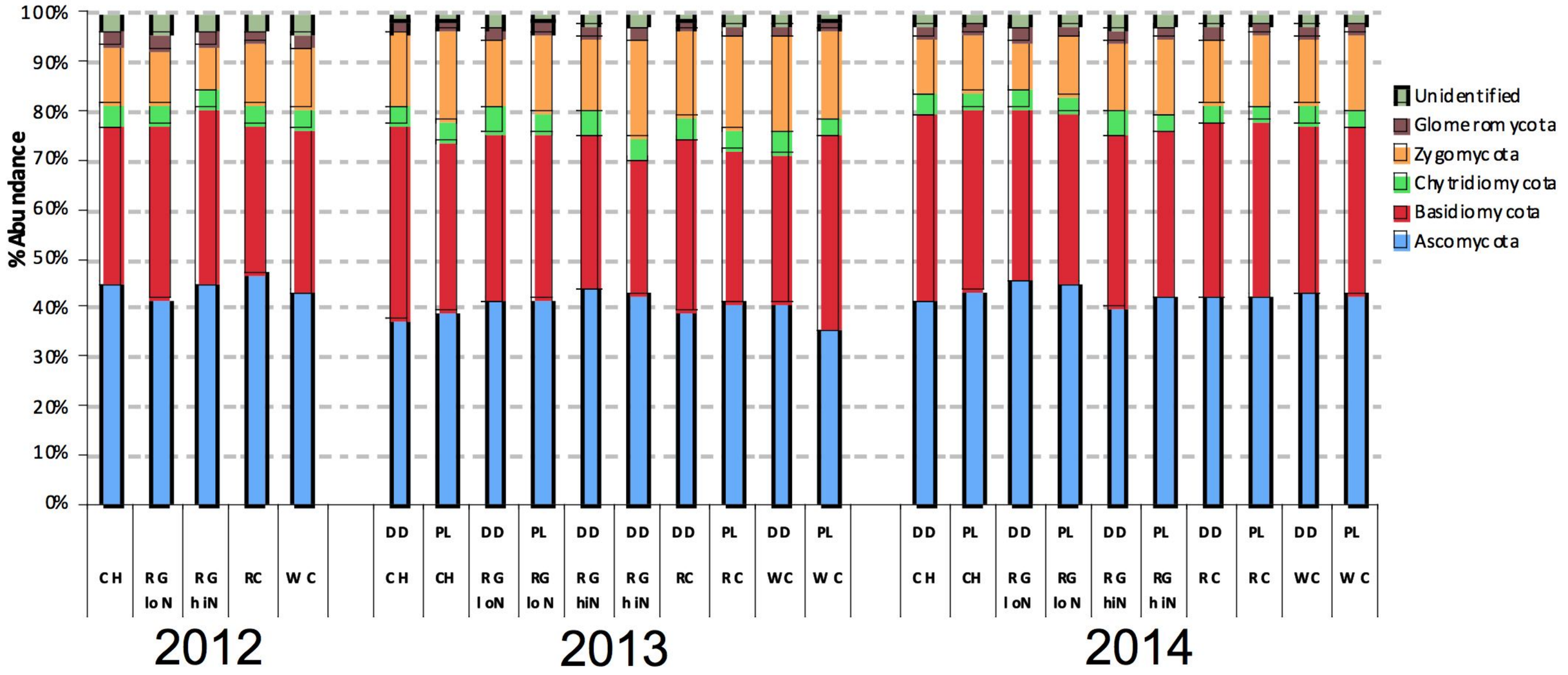
Suppdata 1. Layout of the experimental design. a) Four blocks were divided into 5 plots 7.5 x 12 m and randomly assign a forage crop. After 3 years growth the forages were treated with herbicide and the plots split in to two, one direct drilled with the cereal crop and the other ploughed. b) A time-line of the experiment showing when crops where established and when samples were taken for chemical and DNA analyses



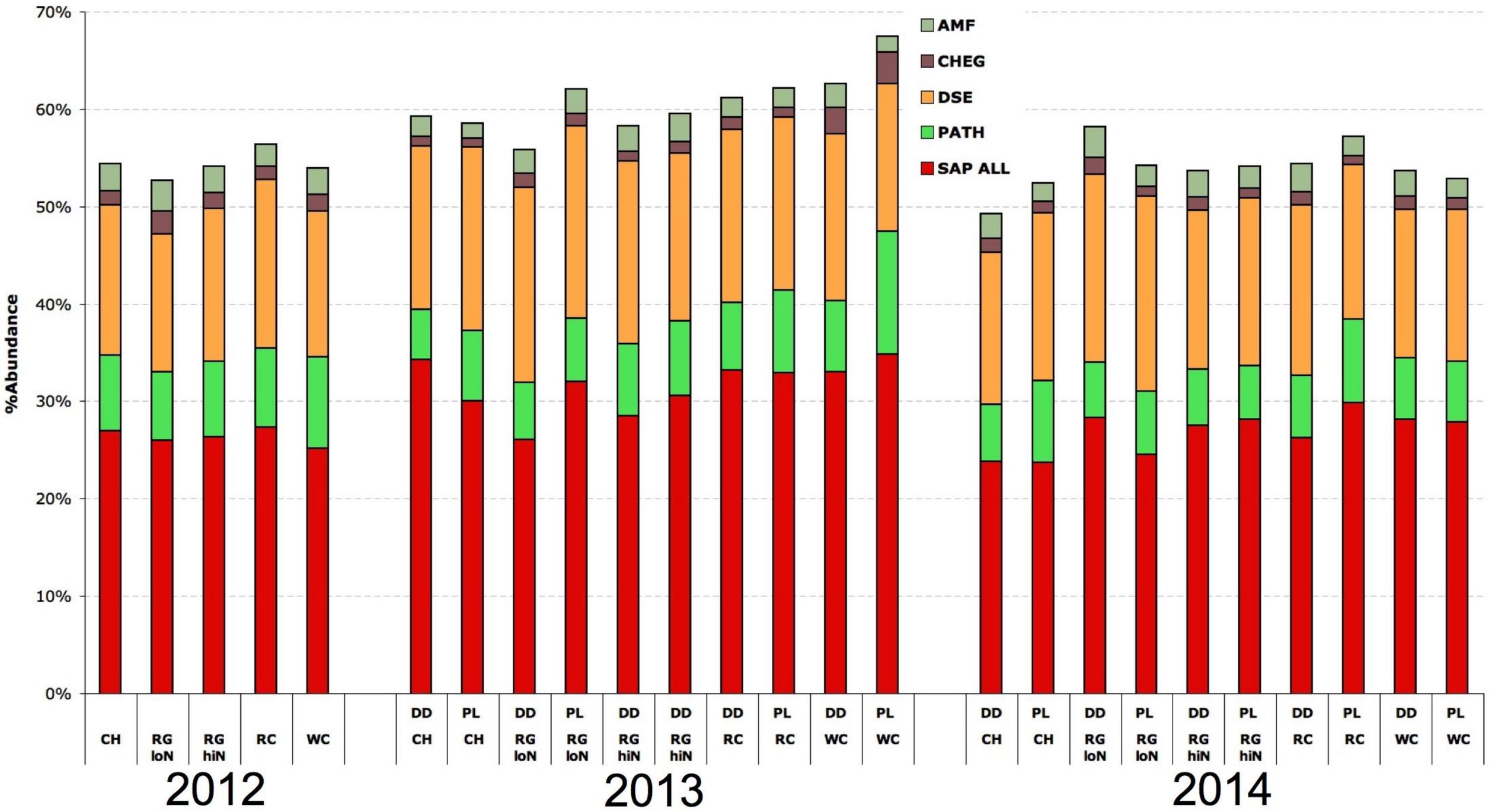
Suppdata 2. Average Phred score (solid) line with standard deviation (dotted line) across the length of the trimmed ion-torrent sequence

												Block	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4	
												Forage Crop Teatment	CY	WC	PRG0N	PRG 200N	RC	PRG 200N	RC	CY	WC	PRG0N	RC	WC	PRG0N	CY	PRG 200N	CY	PRG 200N	RC	PRG0N	WC	
Phylum	Class	Order	Family	Genus	Ecology	Count	Cumulative Total	Mean	Median	Max	Min	PS_7754	PS_7755	PS_7756	PS_7757	PS_7758	PS_7759	PS_7760	PS_7761	PS_7762	PS_7763	PS_7764	PS_7765	PS_7766	PS_7767	PS_7768	PS_7769	PS_7770	PS_7771	PS_7772	PS_7773
Zygomycota	Mortierellom	Mortierellales	Mortierellaceae	*Mortierella*	SAP SOIL	20	206.01%	10.30%	10.10%	13.28%	6.78%	11.39%	13.28%	11.53%	8.90%	9.63%	8.86%	13.23%	11.37%	11.72%	10.98%	12.48%	10.52%	9.40%	10.41%	6.78%	9.79%	9.29%	9.16%	8.08%	9.23%
Basidiomycota	Tremellomyc	Tremellales	Tremellaceae	*Cryptococcus*	SAP SOIL	20	191.48%	9.57%	9.37%	11.93%	7.55%	10.19%	11.17%	9.52%	8.95%	8.96%	11.93%	10.48%	8.91%	11.12%	11.03%	7.56%	10.22%	7.55%	9.22%	8.08%	10.59%	8.36%	10.18%	8.52%	8.95%
Ascomycota	Eurotiomycet	Chaetothyriale	Herpotrichiellaceae	*Veronaea*	DSE	20	180.93%	9.05%	9.06%	12.22%	7.41%	7.78%	8.72%	9.07%	9.11%	9.43%	8.17%	12.22%	10.13%	8.83%	8.05%	9.24%	9.04%	8.30%	7.41%	8.52%	9.64%	9.16%	10.01%	7.95%	10.16%
Ascomycota	Leotiomycete	Helotiales	Helotiaceae	*Cadophora*	DSE	20	92.49%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%
Ascomycota	Dothideomyc	Pleosporales	Pleosporaceae	*Pyrenochaeta*	SAP	20	53.01%	2.65%	2.56%	3.69%	2.18%	2.71%	3.14%	2.35%	2.56%	2.29%	2.36%	2.44%	2.74%	2.18%	3.02%	3.69%	2.19%	2.77%	2.47%	2.60%	2.56%	3.22%	2.28%	2.45%	2.99%
Ascomycota	Dothideomyc	Pleosporales	Didymellaceae	*Didymella*	PATH	20	52.88%	2.64%	2.66%	3.44%	1.93%	2.78%	2.70%	2.68%	2.70%	3.27%	2.46%	3.44%	3.19%	2.48%	2.31%	2.59%	2.12%	2.22%	2.40%	2.25%	2.80%	2.65%	2.68%	1.93%	3.24%
Ascomycota	Leotiomycete	Thelebolales	Thelebolaceae	*Thelebolus*	SAP DUNG	20	51.25%	2.56%	2.63%	3.58%	1.41%	2.85%	2.60%	2.32%	1.41%	3.28%	3.58%	2.74%	2.38%	2.07%	2.08%	3.44%	2.83%	1.68%	2.91%	1.76%	2.65%	3.14%	2.84%	2.12%	2.57%
Basidiomycota	Agaricomyce	Agaricales	Tricholomataceae	OTU 5		20	49.21%	2.46%	2.41%	3.62%	1.33%	2.59%	2.33%	1.77%	2.29%	2.46%	1.33%	1.95%	2.79%	3.01%	2.37%	1.55%	2.29%	3.15%	2.98%	2.90%	2.33%	2.51%	2.26%	3.62%	2.74%
Ascomycota	Dothideomyc	Pleosporales	Melanommataceae	*Herpotrichia*		20	43.31%	2.17%	2.14%	2.95%	1.71%	2.20%	2.31%	2.48%	1.86%	2.47%	2.17%	2.58%	2.42%	2.39%	2.21%	1.96%	2.08%	1.90%	1.91%	1.86%	1.91%	1.83%	2.11%	1.71%	2.95%
Basidiomycota	Agaricomyce	Agaricales	Psathyrellaceae	*Coprinopsis*	SAP SOIL	20	35.81%	1.79%	1.79%	2.65%	1.07%	1.96%	1.64%	1.76%	1.94%	1.70%	1.18%	1.38%	1.62%	1.84%	2.16%	2.65%	1.81%	1.73%	2.32%	1.61%	1.26%	1.07%	2.22%	1.95%	2.02%
Ascomycota	Pezizomycete	Pezizales	Pyronemataceae	*Orbicula*	SAP DUNG	20	35.13%	1.76%	1.68%	2.57%	1.04%	1.74%	1.44%	2.04%	2.08%	1.62%	1.63%	1.04%	1.60%	1.51%	1.87%	1.75%	1.43%	2.57%	1.98%	2.13%	1.52%	2.13%	1.61%	1.95%	1.50%
Ascomycota	Dothideomyc	Pleosporales	Phaeosphaeriaceae	*Ophiosphaerella*		19	31.83%	1.59%	1.71%	2.10%	0.00%	1.49%	0.00%	1.56%	2.05%	1.73%	1.82%	1.34%	1.99%	1.28%	2.08%	0.94%	1.64%	1.93%	1.81%	1.79%	1.21%	1.64%	1.73%	1.70%	2.10%
Basidiomycota	Agaricomyce	Cantharellales	Ceratobasidiaceae	endophyte	ENDO	18	28.07%	1.40%	1.49%	2.07%	0.00%	1.49%	0.00%	1.35%	1.89%	1.46%	1.86%	0.86%	1.47%	0.00%	1.48%	1.10%	2.07%	1.91%	1.62%	1.62%	1.42%	1.62%	1.28%	1.93%	1.64%
Glomeromycot	Glomeromyc	Glomerales	Glomeraceae	*Rhizophagus*	AMF	20	27.82%	1.39%	1.41%	1.73%	1.02%	1.34%	1.34%	1.60%	1.72%	1.17%	1.14%	1.02%	1.11%	1.40%	1.08%	1.62%	1.49%	1.73%	1.63%	1.57%	1.41%	1.57%	1.34%	1.52%	1.02%
Basidiomycota	Agaricomyce	Agaricales	Lycoperdaceae	*Vascellum*	SAP SOIL	20	27.32%	1.37%	1.27%	2.16%	0.92%	1.52%	1.18%	1.35%	1.26%	1.22%	1.01%	0.92%	1.26%	1.11%	1.22%	1.55%	1.09%	2.16%	1.52%	1.89%	1.37%	1.50%	1.13%	1.76%	1.27%
Basidiomycota	Agaricomyce	Agaricales	Entolomataceae	*Pouzarella*	CHEG	20	25.03%	1.25%	1.17%	1.77%	0.81%	0.98%	1.15%	1.45%	1.50%	1.11%	1.77%	0.81%	0.87%	1.11%	1.75%	1.42%	1.47%	1.30%	1.42%	1.12%	1.00%	0.93%	1.64%	1.04%	1.19%
Chytridiomyco	Chytridiomyc	Rhizophydiales	Alphamycetaceae	*Betamyces*		20	23.91%	1.20%	1.21%	1.64%	0.89%	1.13%	1.31%	1.34%	1.07%	1.07%	1.26%	1.29%	0.94%	1.36%	1.64%	1.17%	1.33%	1.13%	1.37%	0.98%	1.24%	1.06%	1.42%	0.89%	0.90%
Ascomycota	Pezizomycete	Pezizales	Ascobolaceae	*Ascobolus*	SAP DUNG	20	20.62%	1.03%	0.98%	2.28%	0.56%	1.08%	0.66%	1.01%	0.56%	1.10%	0.69%	2.11%	0.96%	0.93%	0.59%	1.24%	1.01%	0.77%	0.81%	0.81%	2.28%	0.71%	1.20%	1.09%	1.01%
Basidiomycota	Microbotryon	Microbotryomy	Microbotryomycetes i	*Kriegeria*		20	19.54%	0.98%	0.98%	1.19%	0.67%	0.97%	0.98%	1.19%	1.12%	1.08%	0.99%	0.75%	0.92%	0.98%	1.00%	0.67%	1.11%	1.07%	0.90%	0.91%	0.99%	1.04%	1.07%	0.95%	0.85%
Ascomycota	Saccharomyc	Saccharomyce	Saccharomycetaceae	*Lipomyces*	YEAST	20	18.11%	0.91%	0.85%	1.89%	0.73%	0.92%	0.87%	0.79%	0.74%	0.77%	0.77%	0.80%	0.80%	0.95%	0.81%	1.89%	1.08%	0.88%	0.76%	0.73%	0.91%	0.83%	0.89%	0.94%	0.97%
Basidiomycota	Agaricomyce	X	X	OTU 31		20	17.47%	0.87%	0.83%	1.28%	0.55%	0.83%	1.01%	0.82%	1.11%	0.86%	0.55%	0.69%	0.72%	0.84%	0.74%	0.81%	1.28%	0.80%	0.93%	0.92%	0.96%	0.67%	1.12%	0.79%	1.02%
Basidiomycota	Agaricomyce	Agaricales	Tricholomataceae	*Rickenella*		20	16.81%	0.84%	0.72%	1.80%	0.41%	0.95%	0.67%	0.41%	0.70%	1.80%	1.03%	0.53%	0.45%	0.99%	0.46%	0.54%	0.73%	0.71%	0.77%	1.58%	1.36%	0.73%	0.70%	1.10%	0.59%
Ascomycota	Dothideomyc	Capnodiales	Davidiellaceae	*Cladosporium*		20	16.32%	0.82%	0.80%	1.12%	0.37%	0.87%	0.73%	1.11%	0.84%	0.72%	0.89%	0.37%	0.79%	0.72%	0.65%	1.10%	0.76%	1.03%	0.83%	0.78%	0.91%	1.12%	0.67%	0.80%	0.64%
Ascomycota	Leotiomycete	Helotiales	Helotiaceae	*Tetracladium*	DSE	20	15.62%	0.78%	0.82%	1.10%	0.51%	0.66%	0.82%	0.84%	0.83%	0.82%	0.70%	0.58%	0.57%	0.51%	0.68%	0.99%	0.98%	0.77%	0.81%	1.10%	0.58%	0.87%	0.83%	0.85%	0.82%
Basidiomycota	Agaricomyce	Sebacinales	Sebacinaceae	*Sebacina*	MR EM	20	15.45%	0.77%	0.64%	1.64%	0.41%	0.89%	0.41%	1.04%	0.71%	0.54%	1.64%	0.46%	0.57%	0.43%	1.22%	0.47%	0.51%	1.22%	0.81%	1.04%	0.49%	1.07%	0.56%	0.84%	0.53%
Basidiomycota	Agaricomyce	X	X	OTU 30		20	14.89%	0.74%	0.75%	1.06%	0.48%	0.65%	0.71%	0.57%	1.06%	0.88%	0.57%	0.48%	0.67%	0.57%	0.58%	0.79%	0.96%	0.85%	0.82%	0.85%	0.65%	0.84%	0.90%	0.88%	0.63%
Ascomycota	Leotiomycete	Helotiales	Helotiales incertae se	*Graddonia*		20	14.38%	0.72%	0.77%	1.04%	0.14%	0.74%	0.91%	0.67%	0.84%	0.86%	0.64%	0.96%	0.93%	0.19%	0.14%	0.61%	0.72%	0.79%	0.49%	0.21%	1.01%	0.91%	1.04%	0.97%	0.75%
Ascomycota	Leotiomycete	Helotiales	Hyaloscyphaceae	*Microscypha*	DSE	20	13.93%	0.70%	0.69%	1.01%	0.34%	0.64%	0.44%	0.65%	1.01%	0.84%	0.80%	0.34%	0.69%	0.62%	0.83%	0.83%	0.69%	0.79%	0.62%	0.86%	0.52%	0.77%	0.58%	0.64%	0.79%
Basidiomycota	Agaricomyce	Thelephorales	Thelephoraceae	*Thelephora*	MR EM	20	12.96%	0.65%	0.48%	1.47%	0.34%	0.41%	0.44%	0.47%	0.68%	0.36%	0.69%	0.39%	0.34%	0.48%	0.38%	0.67%	0.78%	1.34%	0.46%	0.77%	0.45%	1.47%	0.76%	1.21%	0.41%
Ascomycota	Dothideomyc	Pleosporales	Pleosporales incertae	*Massariosphaeria*	SAP AQ	20	12.88%	0.64%	0.62%	1.00%	0.47%	0.56%	0.55%	0.67%	0.72%	0.55%	0.74%	0.47%	0.68%	0.53%	0.61%	0.58%	0.53%	0.49%	0.76%	1.00%	0.53%	0.72%	0.63%	0.90%	0.65%
Ascomycota	Eurotiomycet	Eurotiales	Trichocomaceae	*Penicillium*	SAP SOIL	20	12.35%	0.62%	0.60%	0.94%	0.47%	0.63%	0.47%	0.49%	0.86%	0.69%	0.56%	0.69%	0.71%	0.51%	0.67%	0.56%	0.47%	0.49%	0.59%	0.52%	0.47%	0.64%	0.62%	0.77%	0.94%
Ascomycota	Leotiomycete	Leotiomycetes	Pseudeurotiaceae	*Pseudogymnoascus*		12	12.28%	0.61%	0.84%	1.61%	0.00%	0.00%	0.00%	0.99%	1.50%	0.00%	0.00%	1.06%	0.91%	0.97%	0.94%	0.00%	0.84%	0.74%	0.00%	1.61%	0.83%	0.00%	1.00%	0.88%	0.00%
Unidentified Fu	X	X	X	OTU 40		20	11.77%	0.59%	0.64%	0.87%	0.37%	0.71%	0.37%	0.46%	0.48%	0.66%	0.87%	0.42%	0.71%	0.43%	0.72%	0.40%	0.38%	0.66%	0.70%	0.65%	0.67%	0.79%	0.59%	0.46%	0.63%
Ascomycota	Eurotiomycet	Chaetothyriale	Herpotrichiellaceae	OTU 27		13	11.32%	0.57%	0.66%	1.46%	0.00%	0.58%	0.68%	1.21%	0.00%	0.76%	0.00%	0.58%	0.79%	0.79%	1.46%	0.00%	0.63%	0.98%	0.94%	1.23%	0.00%	0.00%	0.00%	0.00%	0.69%
Zygomycota	Mucoromyco	Endogonales	Endogonaceae	*Endogone*		20	11.27%	0.56%	0.53%	1.04%	0.25%	0.28%	0.29%	0.33%	0.25%	0.28%	0.45%	0.31%	0.65%	0.51%	0.54%	0.97%	0.73%	0.46%	0.62%	0.67%	0.42%	0.90%	1.04%	0.71%	0.89%
Ascomycota	Leotiomycete	Helotiales	Dermateaceae	*Mollisia*	DSE	20	11.18%	0.56%	0.56%	0.87%	0.35%	0.47%	0.55%	0.60%	0.56%	0.43%	0.84%	0.35%	0.50%	0.57%	0.62%	0.76%	0.43%	0.39%	0.47%	0.87%	0.36%	0.70%	0.43%	0.70%	0.57%
Basidiomycota	Agaricomyce	Agaricales	Psathyrellaceae	*Parasola*	SAP SOIL	20	11.00%	0.55%	0.57%	1.29%	0.30%	0.38%	0.32%	0.60%	0.61%	0.40%	0.59%	0.30%	0.57%	0.46%	0.31%	0.61%	0.65%	0.53%	0.60%	0.58%	0.52%	1.29%	0.61%	0.52%	0.57%
Basidiomycota	Agaricomyce	Sebacinales	Sebacinaceae	*Piriformospora*	ORCHID	20	10.11%	0.51%	0.44%	1.19%	0.32%	0.42%	0.39%	0.32%	0.59%	0.45%	0.38%	0.39%	0.43%	0.42%	1.19%	0.61%	0.36%	0.73%	0.50%	0.47%	0.45%	0.80%	0.35%	0.47%	0.39%
Basidiomycota	Agaricomyce	Agaricales	Bolbitiaceae	*Panaeolus*	SAP SOIL	20	10.08%	0.50%	0.50%	0.77%	0.21%	0.38%	0.47%	0.50%	0.77%	0.56%	0.45%	0.21%	0.43%	0.51%	0.61%	0.49%	0.39%	0.66%	0.51%	0.72%	0.44%	0.52%	0.35%	0.71%	0.43%
				% Fungi identified to family				79.39%	79.49%	82.03%	76.04%	79.95%	80.91%	80.49%	79.37%	78.93%	81.77%	80.09%	79.62%	80.19%	80.30%	82.03%	79.10%	77.29%	78.64%	76.04%	79.63%	79.12%	78.12%	77.25%	79.06%
				% Fungi identified to genus				69.67%	69.65%	72.99%	65.53%	70.71%	70.97%	69.59%	68.86%	69.66%	72.70%	71.40%	69.82%	69.67%	69.63%	72.99%	69.30%	67.54%	68.04%	65.53%	71.12%	70.36%	69.24%	67.56%	68.64%
				Ascomycota				44.14%	43.88%	48.15%	40.67%	43.53%	40.67%	43.52%	44.22%	46.75%	43.09%	48.15%	47.41%	40.67%	41.08%	46.12%	42.98%	41.92%	42.22%	45.62%	45.70%	45.05%	44.50%	41.75%	47.77%
				Basidiomycota				32.87%	32.99%	37.14%	26.93%	32.92%	32.74%	32.33%	35.14%	32.60%	36.18%	26.93%	29.13%	34.21%	34.78%	29.35%	33.06%	34.66%	34.13%	34.80%	30.93%	33.20%	32.53%	37.14%	30.61%
				Blastocladiomycota				0.01%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
				Chytridiomycota				4.19%	4.05%	5.31%	3.59%	3.85%	4.60%	4.02%	3.74%	3.66%	3.59%	4.08%	4.21%	4.83%	4.65%	3.91%	4.28%	4.70%	4.53%	3.93%	5.31%	3.75%	4.70%	3.68%	3.66%
				Entomophthoromycota				0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%
				Fungi incertae sedis				11.59%	11.25%	14.30%	8.14%	13.02%	14.07%	12.55%	10.10%	10.61%	10.01%	14.11%	12.82%	12.76%	12.20%	14.30%	11.90%	10.58%	11.60%	8.14%	10.90%	10.76%	10.86%	9.62%	10.88%
				Glomeromycota				2.88%	2.94%	3.40%	2.15%	2.80%	2.93%	3.40%	3.14%	2.15%	2.78%	2.33%	2.30%	2.95%	2.86%	2.72%	3.19%	3.22%	3.17%	3.23%	3.15%	3.09%	2.59%	3.17%	2.53%
				Unidentified (X)				4.30%	4.34%	4.93%	3.40%	3.89%	4.80%	4.17%	3.64%	4.22%	4.36%	4.32%	4.13%	4.54%	4.44%	3.40%	4.54%	4.93%	4.36%	4.28%	4.01%	4.05%	4.80%	4.65%	4.55%
				Fungi Total				13517.1	14063	15021	4447	14402	12805	14323	14501	14132	15021	13669	14101	13404	12529	4447	14025	14142	13772	14539	13700	14233	13880	14746	13971
				Non Fungi Total				3084.45	2902	5362	2626	3176	3355	2829	2887	3098	3512	2779	2830	3435	5362	2683	3127	2626	2917	2839	2965	2821	2782	2677	2989
				OTU Count				337.3	343.5	374	188	340	339	351	351	354	341	318	352	316	321	188	338	374	350	372	335	344	343	361	358
				Taxon Count				290.9	298.5	327	169	292	282	305	298	306	299	268	308	275	274	169	293	315	303	327	287	299	296	316	306
				Inverse Simpson Index (Taxa)				30.82	30.41	40.77	21.51	29.44	24.83	28.90	34.23	31.25	32.42	21.51	27.53	27.07	29.67	26.58	30.29	35.46	33.05	40.77	29.75	33.40	30.54	38.67	30.97
				Shannon Index (Taxa)				4.29	4.29	4.49	4.06	4.27	4.18	4.28	4.37	4.33	4.30	4.06	4.26	4.21	4.25	4.09	4.30	4.40	4.34	4.49	4.27	4.34	4.27	4.45	4.32
				Inverse Simpson Index (OTU)				34.26	33.88	45.44	23.28	33.11	27.77	31.73	38.07	34.32	36.81	23.28	30.05	30.04	33.70	28.86	33.74	39.44	36.96	45.44	33.71	36.79	34.02	42.78	34.66
				Shannon Index (OTU)				4.46	4.46	4.65	4.22	4.46	4.38	4.45	4.54	4.49	4.46	4.22	4.43	4.37	4.43	4.24	4.47	4.60	4.52	4.65	4.46	4.51	4.46	4.62	4.51

Suppdata 3. Example output. This example shows the top 40 taxa and summary data for the 2012 sampling (taxa with >2% abundance shown in green and those with ≤0.2% abundance shown in red).



Suppdata 4. Stacked barchart showing mean abundance (mean of four plots) of fungal sequences attributed to five fungal phyla across the 25 treatments: Five different forage crops in 2012 and the split plots of ploughing [PL]/direct-drilling [DD] of spring wheat and winter barley in 2013 and 2014 respectively. Forage crops were chicory [CH], ryegrass with low N [RG loN], ryegrass with high N [RG hiN], red clover [RC] and white clover [WC].



Suppdata 5. Stacked barchart showing mean abundance (mean of four plots) of fungal sequences attributed to six functional/ecological groupings across the 25 treatments: Five different forage crops in 2012 and the split plots of ploughing [PL]/direct-drilling [DD] of spring wheat and winter barley in 2013 and 2014 respectively. Forage crops were chicory [CH], ryegrass with low N [RG loN], ryegrass with high N [RG hiN], red clover [RC] and white clover [WC].

Suppdata 6. Harvesting of the winter barley crop in July 2014 at Gogerddan Farm.

Suppdata 6. Photographs of the experimental plots at Gogerddan Farm. A) Forage crops in September 2011; B) Ploughing of the forage plots prior to sowing of spring wheat in April 2013; C) Winter wheat in July 2013; D) Barley in May 2014.

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
D1F2 primer (5'-3')	C	Y	Y	A	G	T	A	R	C	T	G	C	G	A	G	T	G	A	A	G
%Frequency Glomeromycota	93.8	100	100	100	100	100	100	99.2	92.2	17.8	100	99.2	100	100	94.6	94.6	100	99.2	100	100
%Frequency Archaeorhizomycetes	100	100	100	100	100	100	100	100	9.09	1.92	100	100	100	100	5.56	96.3	100	100	100	96.4
NILC2-AF primer (5'-3')	G	A	G	C	T	G	C	A	T	T	C	C	C	A	A	A	C	A	A	
%Frequency Glomeromycota	86.2	99.3	99.3	100	100	100	100	100	30.9	98.5	100	99.3	100	100	100	100	100	100	99.3	
%Frequency Archaeorhizomycetes	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98.2	100	100	

Suppdata 7. Forward and reverse primers matching frequencies for the Glomeromycota and Archaeorhizomycetes (analysis of 139 and 55 GenBank sequences respectively). Significant mismatches are highlighted in yellow.